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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)


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Applicant's or agent's file reference 0000053866		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/EP 03/08087	International filing date (day/month/year) 24.07.2003	Priority date (day/month/year) 23.08.2002
International Patent Classification (IPC) or both national classification and IPC A61L15/18		
Applicant BASF AKTIENGESELLSCHAFT et al.		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 6 sheets, including this cover sheet.
 - ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

- This report contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 02.12.2003	Date of completion of this report 12.11.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Schnack, A Telephone No. +49 89 2399-8149



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP 03/08087

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17):*

Description, Pages

1-40 as originally filed

Claims, Numbers

1-29 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-29
	No: Claims	NONE
Inventive step (IS)	Yes: Claims	1-29
	No: Claims	NONE
Industrial applicability (IA)	Yes: Claims	1-29
	No: Claims	NONE

2. Citations and explanations

see separate sheet

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International application No. PCT/EP 03/08087

Reference is made to the following documents:

- D1: US 4 351 754 A (DUPRE JEAN) 28 September 1982 (1982-09-28)
- D2: WO 98 52979 A (AMCOL INTERNATIONAL CORP) 26 November 1998
(1998-11-26)
- D3: WO 00 73596 A (ALBERTA RES COUNCIL INC ;NILEX INC (CA)) 7 December
2000 (2000-12-07)
- D4: US 4 535 098 A (POLAK BRENT T ET AL) 13 August 1985 (1985-08-13)
- D5: US 4 914 066 A (WOODRUM GUY T) 3 April 1990 (1990-04-03) cited in the
application
- D6: WO 91 12031 A (PROCTER & GAMBLE) 22 August 1991 (1991-08-22) cited in
the application
- D7: WO 01 32117 A (PARAGON TRADE BRANDS INC) 10 May 2001 (2001-05-10)
cited in the application

Section V

V.1. Novelty

Remarks under Article 33(2) PCT:

The present application is directed to a process for manufacturing superabsorbent particles, said particles comprising a superabsorbent polymer (SAP) and a clay component; (claims 26-29). claims 1-16 are directed to the particles so obtained by the process according to claims 26-29. The process is characterized by the following steps:

- (a) polymerizing an unneutralized monomer to obtain a SAP hydrogel
- (b) comminuting the SAP hydrogel to form SAP particles
- (c) admixing a clay with the SAP particles
- (d) neutralizing the SAP/clay particles with a neutralizing agent
- (e) drying the particles

The application stresses that an important aspect of the presently claimed subject matter is that the neutralizing step, i.e. step (d), is performed after the mixing with the clay, i.e. after step (c), (cf. present page 5, lines 15-19, page 11, lines 5-9 and page 15,

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lines 20-21, page 20, lines 8-12 and comparative example 1).

D1 discloses a thickening agent for aqueous compositions and for use in e.g. diapers as absorbent, (see col. 2, line 66). This agent comprises a SAP and a clay component. The clay and the polymer according to D1 can be admixed in a variety of ways. Col. 5, line 56 ff. describes that the clay and the polymer may be blended in e.g. dry form followed by addition of a neutralizing agent, (see also col. 6, lines 12-37 and example 1, (B) and example 2). Thus, D1 discloses a process in which the neutralization step takes place after the mixing step.

However, D1 fails to disclose the present comminuting step (b) to form **particles**, for which reason novelty appears acknowledgeable.

D2 and D6 do not appear to disclose the use of clays.

D3 discloses a process in which the super absorbent monomer and the clay component are mixed **before** polymerisation of the monomer, (see, the claims). Thus, novelty appears acknowledgeable in view of D3.

D4 does not appear to disclose the present neutralizing step (d) taking place after the mixing with the clay filler, (see D4, col. 6, lines 30-42 and col. 7, lines 21-45), for which reason novelty of the present process can be acknowledged in view of D4.

The same appears to apply for the teaching according to D5, (see D5, col. 2, line 57 - col. 3, line 25 and claims 5, 6 and 14).

D7 discloses a SAP composition comprising an **underneutralized** SAP and a clay layer. A process according to present claim 1 does not appear to have been disclosed in D7.

Thus, in conclusion, novelty of the presently claimed subject matter appears acknowledgeable in view of the available prior art.

V.2. Inventive step

Remarks under Article 33(3) PCT:

The applicant explains on page 20, second paragraph, that the present application is based upon the finding that improved absorption and retention properties of SAP-clay

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particles can be obtained by a process according to which the clay is added to the SAP hydrogel prior to SAP neutralization. Present **example 6** and **comparative example 3** demonstrate this.

The closest prior art could be considered to be D2. D2 discloses SAP particles intended for use in diapers etc., (see page 1, lines 11-14). The SAP particles according to D2 are made according to a process in which the monomer is polymerized to completion (and optionally crosslinked during polymerization) before neutralization. The so obtained SAP product can further be dried and pulverized according to known methods, (see D2, page 10, line 4 - page 11, line 6). Thus, the difference between the presently claimed subject matter and the teaching of D2 is that a clay is additionally added to the particles **before the neutralization step** according to the present invention. The effects offered by this addition of clay prior to neutralization as opposed to after neutralization is an enhanced water evaporation rate, (cf. present pages 25 and 26). It appears that this effect associated with the particular order in which the steps © and (d) are carried out was not derivable from the available prior art.

Thus, an inventive step of the claimed subject matter appears to be acknowledgeable.

V.3. Industrial applicability

Remarks under Article 33(4) PCT:

The presently claimed subject matter fulfils the requirements for industrial applicability.